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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In Re Application of:	)	Group Art Unit: 3617
	)	
SOMMERFELD, HOWARD	)	Examiner: MCCARRY,ROBERT J., JR.
	)	
Serial No.: 10/733,110	)	AttorneyDocket:CRD 01145
	)	
Filed: December 11, 2003	)	
	)	
For: DRAFT GEAR ASSEMBLY	)	Date: March 8, 2006

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FOR

APPELLANT

Sir:

A notice of Non-Compliant Appeal Brief dated February 8, 2006 was received in response to the appeal brief filed November 21, 2005 in the above-identified application. In the notice of non-compliant appeal brief, the Examiner stated that with respect to item #4, the brief did not contain a concise explanation of the subject matter, but instead contained a

summary of the claimed subject matter. Appellant notes that the brief did contain a summary of the claimed subject matter. However, due to the extensive length of the claims, the pertinent components of the claims were summarized with reference numbers and specification page and line numbers.

In any event, in response to the Examiner's above objection, attached with this communication, and labeled **Appendix A** is a copy of the claims in their entirety with reference numbers inserted therein and specification page and line numbers after each component of the claims.

With respect to item #6 in the Notice of Non-Compliant Appeal Brief, the Examiner states that "the brief states the grounds of rejections and simply sets all arguments in the section title "B. Response to Rejections". Since there are more than one grounds of rejection to be addressed [sic] each argument should be addressed with its own section and heading.

In response thereto, the brief filed November 21, 2005 is reproduced below and the appropriate headings have been inserted in the "Response to Rejections" section of the amended brief.

(1) Real Party in Interest

The real part in interest of the present application is Westinghouse Airbrake Technology Corporation.

(2) Related Appeals and Interferences

There are no appeals or interferences pending which directly affect this application.

(3) Status of Claims

Claims 1-21 are currently pending in this application. Claims 1-21 are finally rejected as per the Office Action dated July 7, 2005.

(4) Status of Amendments

A request for reconsideration was filed August 24, 2005. This request for reconsideration did not result in allowance of the claims as the Examiner stated that such request did not adequately show the novel features in the claims.

(5) Summary of claimed subject matter

A. Background of the Invention

Draft gear assemblies, which utilize friction-type clutch mechanisms to absorb heat energy generated during service, have been in widespread use on railway cars for several years prior

to the present invention. These draft gear assemblies are disposed within an elongated opening located in the center sill member of the railway car along the longitudinal axis thereof and behind the shank, or innermost end, of the railway car's coupling mechanism. In this position, these friction clutch type draft gear assemblies will absorb at least a relatively large portion of both the buff and draft forces generated during service.

The art is replete with various designs of friction clutch draft gear assemblies. A representative listing of these designs is provided in the background portion of this application.

It is well recognized by those in the art that draft gear assemblies must be provided with the capability of maintaining at least a certain minimum shock absorbing capacity both during making up a train consist and in-track service. Such minimum capacity has been specified by the Association of American Railroads (AAR). For example, friction clutch type draft gear assemblies have a specified absolute minimum capacity rating of at least 36,000 foot pounds. Additionally, the heat energy absorbing action of the friction clutch mechanism must enable this minimum capacity rating to be readily achieved without exceeding a specified maximum 500,000-pound reaction force, or

pressure, being exerted on the center sill member of the railway car during both the make-up and operation of the train consist.

In order for the manufacturers of such friction clutch type draft gear assemblies to meet the requirements of the railroad industry, with the ever-increasing load carrying capacity of their modern day railroad cars, it has become extremely important to enhance the overall rated capacity of the friction-type draft gear assemblies as much as possible. this higher capacity rating being found necessary in order to minimize any damage to the cars and/or lading due to the increase forces being exerted on the center sill member of the cars by the heavier loads such cars are now carrying.

U.S. Patent Number 5,590,797, owned by the assignee of the present invention, relates to a friction clutch mechanism for a high capacity draft gear assembly having a higher capacity rating, as discussed above. The friction clutch mechanism in this patent improves upon prior friction clutch mechanisms by modifying the wedge shoe members. Specifically, in the patent, the wedge shoe members have a Brinell Hardness of between 429 and 495 and an upper surface which is tapered form a point disposed inwardly from a tapered outer surface inwardly toward and at an acute angle relative to a longitudinal axis of the friction clutch mechanism at an angle of between 46.5° and 48.5°. This patent also teaches that it is advantageous to

include brass inserts in various plate components of the mechanism to provide a requisite amount of lubrication necessary to prevent detrimental sticking of the friction clutch mechanism after closure of the draft gear assembly and during a release cycle thereof.

While it was found that design resulted in an improved friction clutch draft gear assembly than those previously in use, it was determined that this particular design did not satisfy the requirements as defined in AAR Specification M-901-G. It was determined during testing of Super Mark 50's with rusted friction packs, assembled with H-911 brass inserts, that the units tested had reaction force spikes higher than 500K. This resulted in hammer capacities of less than 36,000 ft/lbs. When tested on the test track, the same super Mark 50 reached the 500K reaction force levels well before the 5-MPH requirement for a G specification draft gear.

B. Instant Invention

For a concise comparison of each claim component with reference numerals and specification line and page numbers, please see Appendix A, attached with this communication. To follow is an explanation of the invention in summary form including reference numerals and specification line and page numbers inserted therein.

The present invention comprises an improved friction clutch mechanism 20 for absorbing heat energy in a friction clutch type draft gear assembly. The friction clutch mechanism includes a pair of outer stationary plate members 12 having an outer surface 14 which is engageable with respective radially opposed portions of an inner surface 16 of a draft gear housing member 18 adjacent an open end 22 of the housing member. The friction clutch mechanism further includes a pair of movable plate members 38, each of which has a portion of an outer surface 40 frictionally engageable with a respective inner surface 13 of the pair of outer stationary plate members 12. Each of the movable plate members 38 is generally rectangular in shape and the outer surface 40 is disposed substantially parallel to the inner surface 13 of the outer stationary plate members 12. See page 9, line 10-page 10, line 4.

A pair of inner stationary plate members 44 are provided, each of which has an outer surface 46 frictionally engageable with at least a portion of a respective inner surface 39 of the pair of movable plate members 38. An inner surface 48 of each of the inner stationary plate members 44 is tapered at a first predetermined angle of approximately 4.5°. See page 10, lines 5-16.

A pair of wedge shoe members 54 is provided, each including a tapered outer surface 56 frictionally engageable with a

respective inner surface 48 of the tapered stationary plate members 44. The wedge shoe members 54 further include an upper surface 58, which is tapered from a point disposed inwardly from the tapered outer surface 56 inwardly toward and at an acute angle relative to a longitudinal axis of the friction clutch mechanism. This tapered upper surface is tapered at an angle of approximately 49.0-50.0°, preferably at an angle of 49.5°. See-Page 11, lines 1-4.

The wedge shoe members 54 also include a bottom surface 60, which is tapered from a point disposed inwardly from the tapered outer surface 56 inwardly toward and at an acute angle relative perpendicularly to the longitudinal axis of the friction clutch mechanism. See page 11, lines 5-9.

A center wedge member 66 is provided which includes a pair of correspondingly tapered surfaces 68 frictionally engageable with an upper tapered surface 58 of a respective one of such pair of wedge shoe members 54. The pair of tapered surfaces 68 of the center wedge 54 is tapered at an angle of between about 49.0-50.0°, preferably at an angle of 49.5°. See page 11, lines 10-18.

The inner surface of each of the outer stationary plate members 12 includes a first elongated slot 24. A first lubricating insert member 28 formed from a mixture of a pre-

selected lubricating metal and 2% graphite is disposed within this first slot 24. See page 11, line 19-page 12, line 6.

The outer surface 46 of each of the tapered plates 44 include a second elongated slot 52. A second lubricating insert member 53, formed from a mixture of a pre-selected lubricating metal and 2% graphite, is disposed within this second slot 52. See page 12, lines 7-17.

The outer tapered surface 56 of each of the wedge shoe members 54 include a third elongated slot 62. A third lubricating insert member 64, formed from a mixture of a pre-selected lubricating metal and 2% graphite, is disposed within this third slot 62. See page 12, line 18-page 13, line 4.

In a second aspect of the invention, a high capacity friction clutch type draft gear assembly is provided which includes a housing member 18 and a compressible cushioning means 19 disposed with a cavity of the housing member 18. See page 13, line 5-page 14, line 8. The inventive friction clutch mechanism 20, discussed in detail above, is disposed at least partially within an open end 22 of the housing member 18. See page 14, lines 9-12.

(6) Grounds of rejection to be reviewed on appeal

Whether claims 1-17 are unpatentable under the judicially created doctrine of double patenting over claims 1, 3, 5, 7-10 and 12 of U.S. Patent No. 5,590,797.

Whether claims 1-21 are unpatentable under 35 U.S.C. 103(a) over Duffy et al (US 5,590,797).

(7) Argument

A. Examiner's rejections

Double Patenting Rejection: It is the Examiner's position that the subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter as follows: The instant application recites the features of a friction clutch mechanism for a type of draft gear. The prior art discloses the same friction clutch draft gear assembly. The claims of the prior art show the same features as the claimed recited in the instant application, however, the claims of the prior art show the tapered surface to be tapered at an angle between 46.5 and 48.5 degrees while the claims of the application recited the tapered surfaces to be tapered at an angle between 49 and 50 degrees. It is the Examiner's position that it would have been obvious to "see that this change in angle is minimal and would have been obvious to adjust the

components slightly for fine-tuning of the device". The Examiner also notes that the instant claims of the application recite an insert member formed from a pre-selected lubricating metal with at least 2% graphite. The Examiner states that the prior art discloses a pre-selected metal lubricant for the various insert members. The Examiner concludes that it would have been obvious to understand that "since the prior art recites a preselected metal lubricant it is broader than the instant claims and therefore would encompass a metal lubricant with graphite". The Examiner concludes this rejection with the statement that "there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application, which matured into a patent".

Rejection under 35 USC 103(a): The Examiner states that Duffy et al discloses all of the limitations for a friction clutch mechanism for a draft gear assembly and that the prior art discloses the same friction clutch draft gear assembly as is evident from the figures and claims. The Examiner acknowledges that the claims of the prior art show the tapered surfaces to be tapered at an angle between 46.5 and 48.5 degrees, however, it is the Examiner's position that it would have been obvious "to see that this change in angle is minimal and would have been obvious to adjust the components slightly for fine-tuning of the

device". With respect to the claimed limitation that the inserts comprise a pre-selected lubricating metal with at least 2% graphite, the Examiner states that it would have been obvious to one of ordinary skill in the art to understand that "since the prior art recites a pre-selected metal lubricant it is broader than the instant claims and therefore would encompass a metal lubricant with graphite".

B. Response to Rejections

Appellant respectfully disagrees with the Examiner's rejections for the following reasons.

Double Patenting Rejection/Grounds for Rejection Unclear

With respect to the Double Patenting rejection, clarification of this rejection has been requested in the Request for Reconsideration so that Appellant could properly respond to this rejection. Clarification has yet to be provided.

The heading of this rejection implies that the Examiner is applying a straight "double-patenting" rejection, however, the body of the rejection implies that the Examiner is applying an "obviousness" double patenting rejection. A response to both types of rejections are provided below.

Double Patenting Rejection

The applicant disagrees with the Examiner's position for the following reasons. The Examiner states that the subject matter claimed in the instant application is fully disclosed in

the patent and is covered by the patent since the patent and the application are claiming common subject matter. The Examiner acknowledges that the claims of the application differ from those of the patent in that the application claims require that the upper surfaces of the wedge shoe members are tapered at an angle of 49-50° as opposed to 46.5-48.5°, which was claimed in U.S. Patent No. 5,590,797. It is the Examiner's position that it would have been obvious to "adjust the components slightly for fine-tuning of the device".

Double Patenting Rejection of claims 4, 6, 8, 15 and 17

As to the rejection of claims 4, 6, 8, 15, and 17, the Examiner also acknowledges that the claims of the application differ from those of the patent in that the application claims require the use of a metal lubricant containing at least 2% graphite whereas the claims of U.S. Patent No. 5,590,797 required the use of a metal lubricant. It is the Examiner's position the it would have been obvious to one of ordinary skill in the art to "understand that since the prior art recited a preselected metal lubricant, it is broader than the instant claims and therefore would encompass a metal lubricant with graphite".

If the Examiner is applying a straight "double-patenting" rejection, then his attention is directed to MPEP 804 (II), which discusses the difference between "domination" versus

"double patenting". MPEP 804 (II) (A) further states that double patenting does not exist in the case wherein a "broader" limitation is recited in the issued patent and a "narrower" limitation is now being defined in the claims. See the recitation that recites "the invention defined by a claim reciting a compound having a "halogen" substituent is not identical to or substantively the same as a claim reciting the same compound except having a "chlorine" substituent in place of the halogen because "halogen" is broader than "chlorine". Thus, with respect to claims 4, 6, 8, 15, and 17, the Examiner's argument that "since the prior art recited a preselected metal lubricant, it is broader than the instant claims and therefore would encompass a metal lubricant with graphite" is not a basis for rejection of the claims under the judicially created doctrine of double patenting. Furthermore, with respect to claims 1-17, 35 USC 101 does not allow one to "adjust" the claimed range limitations for "fine-tuning" **outside** of the claimed range in the patent in order to overcome the claimed limitations of the application.

Obviousness-Type Double Patenting

If the Examiner is applying an "obvious-type double-patenting" rejection, then the Examiner has failed to present a prima-facie case of obviousness as he has failed to cite any art in support of his obviousness conclusions. There is no

suggestion in the ('797) patent to "fine-tune" outside of the claimed range. Rather, one having ordinary skill in the art would be motivated to "fine-tune" within the disclosed and claimed range. Furthermore, one having ordinary skill in the art would not be motivated to add 2% graphite to the insert members of the present invention just through the disclosure of the ('797) patent to use metal insert members. As stated above, the Examiner has failed to cite any additional art in support of his obviousness conclusions.

For the reasons set forth above, it is respectfully requested that the final rejection of claims 1-17 under the judicially created doctrine of double patenting over claims 1, 3, 5, 7-10 and 12 of U.S. Patent No. 5,590,797 be reversed.

Rejection of Claims 1-21 under 35 USC 103(a)

Claims 1-21 are finally rejected under 35 USC 103(a) as being obvious over the teachings of Duffy et al (5,590,797). It is the Examiner's position that since the change in angle is minimal, it would have been obvious to one of ordinary skill in the art to adjust the components slightly for fine-tuning of the device. The Examiner also states that it would have been obvious to one having ordinary skill in the art to understand that since the prior art recites a pre-selected metal lubricant, this limitation is broader than the instant claims and therefore would encompass a metal lubricant with graphite.

The Examiner's attention is directed to the background portion of the specification at pages 4-5 wherein U.S. Patent No. 5,590,797 is discussed in detail. While it was found that the ('797) design resulted in an improved friction clutch draft gear assembly than those previously in use, it was determined that this particular design did not satisfy the requirements as defined in AAR Specification M-901-G. It was determined during testing of Super Mark 50's, with rusted friction packs, assembled with H-911 brass inserts, that the units tested had reaction force spikes higher than 500K. This resulted in hammer capacities of less than 36,000 ft/lbs. When tested on the test track, the same super Mark 50 reached the 500K reaction force levels well before the 5-MPH requirement for a G specification draft gear. It was determined through extensive testing and evaluation that slightly increasing the center wedge shoe angle increases the clamping force on the friction pack. It was further determined that applying inserts containing 2% graphite reduces unwanted reaction force spikes. The combination of these modifications increases the overall performance of the draft gear without adversely affecting its operation and meets the requirements as defined by AAR Specification M-901-G. Thus, while it might seem "obvious" to the Examiner to "fine-tune" the draft gear disclosed in the U.S. Patent No. 5,590,797 such was not obvious to the inventors of this patent. An angle range of

46.5-48.5 is recited in the patent. It is the Examiner's position that one would have been motivated to "fine-tune" their draft gear and/or to "round-up" the upper end-point of the cited patent's range to 49 degrees. Furthermore, note that claims 2 and 12 state that the tapered upper surface of each of the wedge shoe members is tapered at an angle of about 49.5 degrees. This limitation is a full degree higher than the range recited in the patent. (note that the preceding comments regarding claims 2 and 12 have been added in this amended appeal brief) It is the Applicant's position that the Examiner is using impermissible hindsight to make such a conclusion. If one having ordinary skill in the art were simply "fine-tuning" their draft gear, then he/she would be motivated to "fine-tune" within this range. There is no suggestion within the patent that would suggest one to "fine-tune" outside of the range or "round-up" from the upper end-point of the range claimed in the ('797) patent.

Claims 4, 6, 8, 15, 17 and 19

With respect to the claimed limitation of inserts containing 2% graphite as recited in claims 4, 6, 8, 15, 17 and 19, the Examiner's basis for determining obviousness in that the disclosure of metal inserts within the ('797) patent is **"broader"** than the particularly claimed 2% graphite inserts would **"encompass"** the claims of the present invention is not a valid test of obviousness. The claims of the present invention,

which require inserts containing 2% graphite, are **narrower and more specific than those of the ('797) patent.**

The assignee of the present invention has **improved** the draft gear of the ('797) patent and is claiming these improvements in the narrower claims of the present invention. The burden of proof is on the Examiner to show that the use of the more specifically claimed inserts is obvious.

Applicant further argues that since the claimed amount of graphite is "such a small amount, this could easily be found in a metal lubricant". The art of record does not support this argument. The Examiner has failed to cite any art that teaches a metal lubricant containing 2% graphite in a draft gear as is being claimed. The Examiner is using hindsight to reconstruct the invention and has thus failed to render the claims of the present application obvious.

In the Final Office Action, the Examiner argues that "it appears, based on applicant arguments, that the angle of the wedge shoe was claimed based on a constantly changing AAR specification. This argument is not understood. Appellant never argued that the AAR specifications were "constantly changing". Appellant argued that the prior art didn't satisfy the AAR specifications. Extensive testing and modifications of the draft gear of ('797) patent resulted in the draft gear of the present invention, which does meet these standards. However,

even if "constantly changing AAR specifications" were occurring, such an argument is irrelevant. The art of record still fails to meet the limitations of the claims.

In view of the forgoing arguments, it is requested that the final rejection of claims 1-21 under 35 USC 103(a) over the teachings of Duffy et al (5,590,797) be reversed, as this patent fails to render claims 1-21 obvious.

C. Conclusion

In view of the above considerations, and regarding the rejections of claims 1-17, it is respectfully submitted that the Examiner erred in finally rejecting these claims under the judicially created doctrine of double patenting over claims 1, 3, 5, 7-10 and 12 of U.S. Patent No. 5,590,797. It is also respectfully submitted that the Examiner erred in finally rejection claims 1-21 under 35 USC 103(a) as being unpatentable over Duffy et al (US 5,590,797). For the reasons set forth above, it is respectfully requested that the final rejection of claims 1-21 be reversed.

Respectfully submitted,

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(8) Claims

1. A friction clutch mechanism for use in a friction clutch type draft gear assembly, said friction clutch mechanism comprising:

(a) a pair of outer stationary plate members, each of said pair of outer stationary plate members having an inner and an outer surface, said outer surface being engageable with a respective radially opposed portion of an inner surface of a draft gear housing member adjacent an open end of such housing member;

(b) a pair of movable plate members, each of said movable plate members having at least a predetermined portion of an outer surface thereof frictionally engageable with a respective said inner surface of said pair of outer stationary plate members for absorbing at least a first portion of heat energy generated during closure of such friction clutch type draft gear assembly;

(c) a pair of inner stationary plate members, each of said inner stationary plate members having an outer surface thereof frictionally engageable with at least a portion of a respective inner surface of said pair of movable plate members for absorbing at least a second portion of such heat energy generated during closure of such friction clutch type draft gear

assembly, an inner surface of said each of said inner stationary plate members being tapered at a first predetermined angle;

(d) a pair of wedge shoe members, each of said wedge shoe members including

(i) a tapered outer surface frictionally engageable with a respective said inner surface of said tapered stationary plate members for absorbing a third portion of heat energy generated during closure of such friction clutch type draft gear assembly,

(ii) an upper surface tapered from a point disposed inwardly from said tapered outer surface inwardly toward and at an acute angle relative to a longitudinal axis of said friction clutch mechanism, said tapered upper surface being tapered at an angle of between about 49.0° and about 50.0°, and

(iii) a bottom surface tapered from a point disposed inwardly from said tapered outer surface inwardly toward and at an acute angle relative perpendicularly to said longitudinal axis of said friction clutch mechanism; and

(e) a center wedge member, said center wedge member including a pair of correspondingly tapered surfaces frictionally engageable with an upper tapered surface of a respective one of said pair of wedge shoe members for absorbing

at least a fourth portion of such heat energy generated during closure of such friction clutch type draft gear assembly.

2. A friction clutch mechanism, as recited in claim 1, wherein said tapered upper surface of each of said wedge shoe members is tapered at an angle of about 49.5°.

3. A friction clutch mechanism, as recited in claim 1, wherein said inner surface of each of said outer stationary plate members includes a first elongated slot and a first lubricating insert member disposed within said first elongated slot to prevent detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

4. A friction clutch mechanism, as recited in claim 3, wherein said first lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

5. A friction clutch mechanism, as recited in claim 1, wherein said outer surface of each of said tapered plates includes a second elongated slot and a second lubricating insert member disposed within said second elongated slot to prevent

detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

6. A friction clutch mechanism, as recited in claim 5, wherein said second lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

7. A friction clutch mechanism, as recited in claim 1, wherein said outer tapered surface of each of said wedge shoe members includes a third elongated slot and a third lubricating insert member located within said third elongated slot to prevent detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

8. A friction clutch mechanism, as recited in claim 7, wherein said third lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

9. A friction clutch mechanism, as recited in claim 1, wherein said first predetermined angle of said inner surface of said pair of inner stationary plate members is about 4.5°.

10. A friction clutch mechanism, as recited in claim 1, wherein said pair of tapered surfaces of said center wedge is tapered at an angle of about 49.5°.

11. A high capacity friction clutch type draft gear assembly for absorbing both buff and draft loads being applied to a center sill member of a railway car during make-up of a train consist and in-track operation of such train consist, said friction clutch type draft gear assembly comprising:

(a) a housing member having an end wall for closing a first end thereof, said housing member being open at a radially opposed second end thereof:

(b) a compressible cushioning means disposed within a cavity of said housing member abutting at least a portion of an inner surface of said end wall disposed at said first end of said housing member, said compressible cushioning means extending longitudinally from said first end;

(c) a friction clutch mechanism disposed at least partially within said open end of said housing member, said friction clutch mechanism including;

(i) a pair of outer stationary plate members, each of said pair of outer stationary plate members having an inner and an outer surface, said outer surface being engageable with a respective radially opposed portion of an inner surface of a draft gear housing member adjacent an open end of such housing member;

(ii) a pair of movable plate members, each of said movable plate members having at least a predetermined portion of an outer surface thereof frictionally engageable with a respective said inner surface of said pair of outer stationary plate members for absorbing at least a first portion of heat energy generated during closure of such friction clutch type draft gear assembly;

(iii) a pair of inner stationary plate members, each of said inner stationary plate members having an outer surface thereof frictionally engageable with at least a portion of a respective inner surface of said pair of movable plate members for absorbing at least a second portion of such heat energy generated during closure of such friction clutch type draft gear assembly, an inner surface of said each of said inner stationary plate members being tapered at a first predetermined angle;

(iv) a pair of wedge shoe members, each of said wedge shoe members including

(a) a tapered outer surface frictionally engageable with a respective said inner surface of said tapered stationary plate members for absorbing a third portion of heat energy generated during closure of such friction clutch type draft gear assembly,

(b) an upper surface tapered from a point disposed inwardly from said tapered outer surface inwardly toward and at an acute angle relative to a longitudinal axis of said friction clutch mechanism, said tapered upper surface being tapered at an angle of between about 49.0° and about 50.0°, and

(c) a bottom surface tapered from a point disposed inwardly from said tapered outer surface inwardly toward and at an acute angle relative perpendicularly to said longitudinal axis of said friction clutch mechanism; and

(v) a center wedge member, said center wedge member including a pair of correspondingly tapered surfaces frictionally engageable with an upper tapered surface of a respective one of said pair of wedge shoe members

for absorbing at least a fourth portion of such heat energy generated during closure of such friction clutch type draft gear assembly; and

(d) a spring seat member having at least a portion of a first surface thereof abutting the opposite end of said compressible cushioning means and a second surface for engaging predetermined portions of said friction clutch mechanism, said spring seat member being mounted to move longitudinally within said housing for respectively compressing and releasing said compressible cushioning means during application and release of a force on said draft gear assembly.

12. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said tapered upper surface of each of said wedge shoe members is tapered at an angle of about 49.5°.

13. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said compressible cushioning means includes at least a plurality of springs.

14. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said inner surface of each of said outer stationary plate members include a first

elongated slot and a first lubricating insert member disposed within said first elongated slot to prevent detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

15. A high capacity friction clutch type draft gear assembly, as recited in claim 14, wherein said first lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

16. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said outer surface of each of said tapered plates includes a second elongated slot and a second lubricating insert member disposed within said second elongated slot to prevent detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

17. A high capacity friction clutch type draft gear assembly, as recited in claim 16, wherein said second lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

18. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said outer tapered surface of each of said tapered plates includes a third elongated slot and a third lubricating insert member located within said third elongated slot to prevent detrimental sticking of said friction clutch mechanism after closure of such friction clutch type draft gear assembly and during a release cycle thereof.

19. A high capacity friction clutch type draft gear assembly, as recited in claim 18, wherein said third lubricating insert members are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite.

20. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said first predetermined angle of said inner surface of said pair of inner stationary plate members is about of about 4.5°.

21. A high capacity friction clutch type draft gear assembly, as recited in claim 11 wherein said pair of tapered surfaces of said center wedge is tapered at an angle of about 49.5°.

Appendix A

I Claim:

1. A friction clutch mechanism 20 for use in a friction clutch type draft gear assembly 10, said friction clutch mechanism comprising:

(a) a pair of outer stationary plate members 12, each of said pair of outer stationary plate members having an inner 13 and an outer 14 surface, said outer surface 14 being engageable with a respective radially opposed portion of an inner surface 16 of a draft gear housing member 18 adjacent an open end 22 of such housing member 18; **(Page 9, lines 10-16)**

(b) a pair of movable plate members 38, each of said movable plate members 38 having at least a predetermined portion of an outer surface 40 thereof frictionally engageable with a respective said inner surface 13 of said pair of outer stationary plate members 12 for absorbing at least a first portion of heat energy generated during closure of such friction clutch type draft gear assembly 10; **(Page 9, lines 17-24)**

(c) a pair of inner stationary plate members 44, each of said inner stationary plate members 44 having an outer surface 46 thereof frictionally engageable with at least a portion of a respective inner surface 39 of said pair of movable plate members 38 for absorbing at least a second portion of such heat energy generated during closure of such friction clutch type

draft gear assembly 10, an inner surface 48 of said each of said inner stationary plate members 44 being tapered at a first predetermined angle; **(Page 10, lines 4-13)**

(d) a pair of wedge shoe members 54, each of said wedge shoe members 54 including

(i) a tapered outer surface 56 frictionally engageable with a respective said inner surface 48 of said tapered stationary plate members 44 for absorbing a third portion of heat energy generated during closure of such friction clutch type draft gear assembly 10, **(Page 10, lines 17-23)**

(ii) an upper surface 58 tapered from a point disposed inwardly from said tapered outer surface 56 inwardly toward and at an acute angle relative to a longitudinal axis of said friction clutch mechanism 20, said tapered upper surface being tapered at an angle of between about 49.0° and about 50.0°, and **(Page 10, line 23-Page 11, line 4)**

(iii) a bottom surface 60 tapered from a point disposed inwardly from said tapered outer surface 56 inwardly toward and at an acute angle relative perpendicularly to said longitudinal axis of said friction clutch mechanism 20; and **(Page 11, lines 5-9)**

(e) a center wedge member 66, said center wedge member including a pair of correspondingly tapered surfaces 68 frictionally engageable with an upper tapered surface 58 of a respective one of said pair of wedge shoe members 54 for absorbing at least a fourth portion of such heat energy generated during closure of such friction clutch type draft gear assembly 10. **(Page 11, lines 10-18)**

2. A friction clutch mechanism, as recited in claim 1, wherein said tapered upper surface 58 of each of said wedge shoe members 54 is tapered at an angle of about 49.5°. **(Page 11, line 4)**

3. A friction clutch mechanism, as recited in claim 1, wherein said inner surface 13 of each of said outer stationary plate members includes a first elongated slot 24 and a first lubricating insert member 28 disposed within said first elongated slot to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly 10 and during a release cycle thereof. **(Page 11, line 19-Page 12, line 4)**

4. A friction clutch mechanism, as recited in claim 3, wherein said first lubricating insert members 28 are formed

from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 11, line 4-5)**

5. A friction clutch mechanism, as recited in claim 1, wherein said outer surface 46 of each of said tapered plates 44 includes a second elongated slot 52 and a second lubricating insert member 53 disposed within said second elongated slot 52 to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly 10 and during a release cycle thereof. **(Page 12, lines 7-15)**

6. A friction clutch mechanism, as recited in claim 5, wherein said second lubricating insert members 53 are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 12, lines 15-17)**

7. A friction clutch mechanism, as recited in claim 1, wherein said outer tapered surface 56 of each of said wedge shoe members 54 includes a third elongated slot 62 and a third lubricating insert member 64 located within said third elongated slot to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly and during a release cycle thereof. **(Page 12, line 18-Page 13, line 2)**

8. A friction clutch mechanism, as recited in claim 7, wherein said third lubricating insert members 64 are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 12, lines 2-4)**

9. A friction clutch mechanism, as recited in claim 1, wherein said first predetermined angle of said inner surface 48 of said pair of inner stationary plate members 44 is about 4.5°. **(Page 10, lines 14-16)**

10. A friction clutch mechanism, as recited in claim 1, wherein said pair of tapered surfaces 68 of said center wedge is tapered at an angle of about 49.5°. **(Page 11, line 18)**

11. A high capacity friction clutch type draft gear assembly 10 for absorbing both buff and draft loads being applied to a center sill member of a railway car during make-up of a train consist and in-track operation of such train consist, said friction clutch type draft gear assembly comprising: **(Page 13, lines 5-10)**

(a) a housing member 18 having an end wall for closing a first end thereof, said housing member 18 being open at a radially opposed second end 22 thereof: **(Page 13, lines 11-15)**

(b) a compressible cushioning means 19 disposed within a cavity of said housing member 18 abutting at least a portion of an inner surface 72 of said end wall 70 disposed at said first end of said housing member 18, said compressible cushioning means 19 extending longitudinally from said first end; **(Page 13, lines 16-20)**

(c) a friction clutch mechanism 20 disposed at least partially within said open end 22 of said housing member 18, said friction clutch mechanism 20 including; **(Page 14, lines 9-10)**

(i) a pair of outer stationary plate members 12, each of said pair of outer stationary plate members having an inner 13 and an outer 14 surface, said outer surface 14 being engageable with a respective radially opposed portion of an inner surface 16 of a draft gear housing member 18 adjacent an open end 22 of such housing member 18; **(Page 9, lines 10-16)**

(ii) a pair of movable plate members 38, each of said movable plate members 38 having at least a predetermined portion of an outer surface 40 thereof frictionally engageable with a respective said inner surface 13 of said pair of outer stationary plate members 12 for absorbing at least a first portion of heat energy generated during closure of such friction

clutch type draft gear assembly 10; **(Page 9, lines 17-24)**

(iii) a pair of inner stationary plate members 44, each of said inner stationary plate members 44 having an outer surface 46 thereof frictionally engageable with at least a portion of a respective inner surface 39 of said pair of movable plate members 38 for absorbing at least a second portion of such heat energy generated during closure of such friction clutch type draft gear assembly 10, an inner surface 48 of said each of said inner stationary plate members 44 being tapered at a first predetermined angle; **(Page 10, lines 4-13)**

(iv) a pair of wedge shoe members 54, each of said wedge shoe members including

(a) a tapered outer surface 56 frictionally engageable with a respective said inner surface 48 of said tapered stationary plate members 44 for absorbing a third portion of heat energy generated during closure of such friction clutch type draft gear assembly 10, **(Page 10, lines 17-23)**

(b) an upper surface 38 tapered from a point disposed inwardly from said tapered outer surface

56 inwardly toward and at an acute angle relative to a longitudinal axis of said friction clutch mechanism, said tapered upper surface being tapered at an angle of between about 49.0° and about 50.0°, and **(Page 10, lines 23-Page 11, line 4)**

(c) a bottom surface 60 tapered from a point disposed inwardly from said tapered outer surface 56 inwardly toward and at an acute angle relative perpendicularly to said longitudinal axis of said friction clutch mechanism 20; and **(Page 11, line 5-9)**

(v) a center wedge member 66, said center wedge member including a pair of correspondingly tapered surfaces 68 frictionally engageable with an upper tapered surface 58 of a respective one of said pair of wedge shoe members 54 for absorbing at least a fourth portion of such heat energy generated during closure of such friction clutch type draft gear assembly 10; and **(Page 11, lines 10-18)**

(d) a spring seat member 74 having at least a portion of a first surface 76 thereof abutting the opposite end of said compressible cushioning means 19 and a second surface 78 for engaging predetermined portions of said friction clutch

mechanism 20, said spring seat member 74 being mounted to move longitudinally within said housing 18 for respectively compressing and releasing said compressible cushioning means 19 during application and release of a force on said draft gear assembly 10. **(Page 14, lines 13-21)**

12. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said tapered upper surface 58 of each of said wedge shoe members 54 is tapered at an angle of about 49.5°. **(Page 11, line 4)**

13. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said compressible cushioning means 19 includes at least a plurality of springs. **(Page 13, lines 20-23)**

14. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said inner surface 13 of each of said outer stationary plate members include a first elongated slot 24 and a first lubricating insert member 28 disposed within said first elongated slot 24 to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly 10 and

during a release cycle thereof. **(Page 11, line 19-Page 12, line 4)**

15. A high capacity friction clutch type draft gear assembly, as recited in claim 14, wherein said first lubricating insert members 28 are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 11, lines 4-5)**

16. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said outer surface 46 of each of said tapered plates 44 includes a second elongated slot 52 and a second lubricating insert member 53 disposed within said second elongated slot 52 to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly 10 and during a release cycle thereof. **(Page 12, lines 7-13)**

17. A high capacity friction clutch type draft gear assembly, as recited in claim 16, wherein said second lubricating insert members 53 are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 12, lines 15-17)**

18. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said outer tapered surface 56 of each of said tapered plates includes a third elongated slot 62 and a third lubricating insert member 64 located within said third elongated slot 62 to prevent detrimental sticking of said friction clutch mechanism 20 after closure of such friction clutch type draft gear assembly 10 and during a release cycle thereof. **(Page 12, line 18-Page 13, line 2)**

19. A high capacity friction clutch type draft gear assembly, as recited in claim 18, wherein said third lubricating insert members 64 are formed from a mixture of a pre-selected lubricating metal and at least 2% graphite. **(Page 12, lines 2-4)**

20. A high capacity friction clutch type draft gear assembly, as recited in claim 11, wherein said first predetermined angle of said inner surface 48 of said pair of inner stationary plate members 44 is about of about 4.5°. **(Page 10, lines 14-16)**

21. A high capacity friction clutch type draft gear assembly, as recited in claim 11 wherein said pair of tapered

surfaces 68 of said center wedge 66 is tapered at an angle of about 49.5°. **(Page 11, line 18)**

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